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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/611,845	07/01/2003	Tang-Wei Kuo	GP-303270	2773

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EXAMINER

CORRIGAN, JAIME W

ART UNIT	PAPER NUMBER
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3748

DATE MAILED: 04/12/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/611,845

Applicant(s)

KUO ET AL.

Examiner

Jaime W Corrigan

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 January 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-36 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-14 and 30-36 is/are allowed.
- 6) ☒ Claim(s) 15-29 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

This Office Action is in response to the Request for Reconsideration filed on 26 January 2005. Overall, claims 1-36 are pending in this application. Some of the arguments with respect to the references applied in the previous Office Action were deemed persuasive, however, a new Non-final rejection is set forth below.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 15-19 are rejected under 35 U.S.C. 102(b) as being anticipated by lida et al. (PN 6,374,813).

Regarding claim 15 lida et al. discloses a method of operating a four-stroke internal combustion engine (See Abstract) including a variable volume combustion chamber defined by a piston (See Figure 2 (6)) reciprocating within a cylinder between top-dead center and bottom-dead center points and an intake valve (See Figure 2 (12a)) and an exhaust (See Figure 2 (16a)) valve controlled during repetitive, sequential exhaust, intake, compression and expansion strokes of said piston comprising: establishing a low pressure event (See Column 1 Lines 24-27, Column 11 Lines 27-33) within the combustion chamber during the intake stroke of the piston; and, establishing a combustion chamber rebreathe event during the intake stroke of

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the piston by controlling a rebreathe event exhaust valve opening and closing wherein the rebreathe event exhaust valve opening occurs during the low pressure event (See Column 11 Lines 17-33).

Regarding claim 16 lida et al. discloses said low pressure event is established by controlling phasing of an exhaust event exhaust valve closure and the intake valve opening (See Column 11 Lines 17-33, Lines 39-59).

Regarding claim 17 lida et al. discloses the exhaust event exhaust valve closure absolute phase relative to exhaust stroke top dead center is not greater than the intake valve opening phase after exhaust stroke top dead center (See Figure 12).

Regarding claim 18 lida et al. discloses the exhaust event exhaust valve closure occurs before exhaust stroke top dead center (See Figure 12).

Regarding claim 19 lida et al. discloses the exhaust event exhaust valve closure occurs after exhaust stroke top dead center (See Figure 12).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

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invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 20-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Iida et al. (PN 6, 374,813).

Iida et al. discloses the invention as recited in claim 15 above, however, fails to disclose an exhaust valve lift range, rebreath, exhaust valve and intake valve event angular ranges. It is the Examiner's position that the various lift ranges and angular ranges would have been an obvious matter of design choice well within the level of ordinary skill in the art depending on design variables such as engine load and speed requirements. Moreover, there is nothing in the record which establishes that the claimed lift ranges and angular ranges present a novel or unexpected result (See *In re Kuhle*, 526 F.2d 553, 188 USPQ 7 (CCPA 1975)).

Allowable Subject Matter

Claims 1-14, 30-36 are allowed.

Response to Arguments

Applicant's arguments with respect to claims 15-29 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Unger et al. (PN 6,752,123), Morikawa et al. (PN 6,442,200), Aoyama et al. (PN 4,703,734) disclose similar valve control methods.

Any inquiry concerning this communication from the Examiner should be directed to Examiner Jaime Corrigan whose Carlyle telephone number is (571) 272-4858. The Examiner can normally be reached on Monday – Friday from 8:30 a.m. – 6:00 p.m. 2nd Friday off.

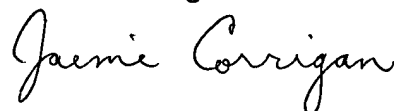
If attempts to reach the Examiner by telephone are unsuccessful, the Examiner supervisor, Thomas D. Denion, can be reached on (571) 272-4859. The fax number for this group is (703) 872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (571) 272-3700.

JC

Jaime Corrigan


A handwritten signature in cursive script that reads "Jaime Corrigan".

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April 05, 2005

Patent Examiner
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THOMAS DENION
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 3700